

Claims

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1. A preweakened automotive interior trim piece *for covering an air bag installation in an automotive vehicle,* said preweakening applied in a predetermined pattern enabling formation of an air bag deployment opening in said trim piece by pressure exerted by a deploying air bag mounted on the inside of said trim piece at a particular location, said trim piece comprised of one or more layers and having an inner surface and an outer surface, said outer surface visible from within said automotive vehicle and extending smoothly and uninterruptedly across said preweakening at said particular location, said preweakening comprising a scoring of said inner surface and extending along said predetermined pattern, said scoring having a stepped depth configuration adjacent to said outer surface of said trim piece, along said predetermined pattern, without completely penetrating through to said outer surface.

2. The trim piece according to claim 1 wherein said trim piece includes a substrate layer and an overlying covering layer.

3. The trim piece according to claim 2 wherein said preweakening extends partially into said substrate.

4. The trim piece according to claim 2 wherein said preweakening extends completely through said substrate.

5. The trim piece according to claim 2 wherein said preweakening extends into the covering layer without completely penetrating through to said outer surface.

6. The trim piece according to claim 1 wherein said trim piece includes a substrate layer, an inner covering layer overlying said substrate and an outside covering layer overlying said inner covering layer.

7. The trim piece according to claim 6 wherein said inner covering layer overlying said substrate layer is a foam layer.

8. The trim piece according to claim 6 wherein said preweakening extends partially into said substrate.

9. The trim piece according to claim 6 wherein said preweakening extends completely through said substrate.

10. The trim piece according to claim 6 wherein said preweakening extends partially into said inner covering layer.

11. The trim piece according to claim 6 wherein said preweakening extends completely through said inner covering layer.

12. The trim piece according to claim 6 wherein said preweakening extends partially into said outer covering layer without completely penetrating through to said outer layer surface.

13. The trim piece according to claim 1 wherein said scoring is continuous.

14. The trim piece according to claim 13 wherein said trim piece includes a substrate layer with one or more covering layers, and wherein said preweakening includes a continuous scoring completely penetrating said substrate layer and extending along said predetermined pattern.

15. The trim piece according to claim 1 wherein said scoring is intermittent.

16. The trim piece according to claim 15 wherein said stepped depth scoring is partial perforations.

17. The trim piece according to claim 15 wherein said stepped depth scoring is slots.

18. The trim piece according to claim 1 wherein there is a predetermined thickness of trim piece material remaining at each point past said stepped depth scoring.

19. The trim piece according to claim 5 wherein said covering layer preweakening is in the form of said stepped depth configuration.

20. The trim piece according to claim 12 wherein said covering layer preweakening is in the form of said stepped depth configuration .

21. A preweakened automotive interior trim piece [for overlying an air bag device for an automotive vehicle,] said preweakening extending in a predetermined pattern enabling formation of an air bag deployment opening in said trim piece at a particular location overlying said air bag by pressure exerted by deploying of said air bag mounted behind an inner surface of said trim piece at said particular location, said trim piece comprising of one or more layers and having an outer visible surface extending smoothly and uninterruptedly across said preweakening pattern, said preweakening comprising a partial scoring of said trim piece along said pattern overlying said air bag, said partial scoring including a continuous groove in said inner surface of said trim piece extending along said pattern, and further including stepped depth penetrations extending partially into said trim piece from the inner surface of said trim piece but not completely penetrating said outer visible surface of said trim piece.

22. The trim piece according to claim 21 wherein said penetrations are round.

23. The trim piece according to claim 21 wherein said penetrations are slots.

24. A preweakened automotive interior trim piece for covering an air bag installation for an automotive vehicle, said preweakening extending in a predetermined pattern enabling formation of an air bag deployment opening in said trim piece by pressure exerted by deployment of said air bag mounted on the inside of said trim piece at a particular location, said trim piece having a plurality of layers including an outer layer and an inner layer, said outer layer having an outer visible surface extending smoothly and uninterruptedly across said preweakening at said particular location, said preweakening comprising a groove extending in

said pattern, but without completely penetrating the outer layer of the said trim piece, said groove having a stepped bottom portion lying along said predetermined pattern.

25. The trim piece according to claim 24 wherein said stepped depth groove portion forms partial perforations in an inside surface of said outer layer.

26. The trim piece according to claim 24 wherein said stepped depth groove portion forms slots in an inside surface of said outer layer

27. A preweakened automotive interior trim piece covering an air bag installation [for an automotive vehicle], said preweakening applied in a predetermined pattern at a particular location so as to enable formation of an air bag deployment opening in said trim piece for said air bag installation covered at said location by pressure exerted by deployment of said air bag, said trim piece having a cover layer with an outer surface visible from within said vehicle interior and extending smoothly and uninterruptedly across said preweakening at said particular location, said trim piece also having an inner surface:

said preweakening comprising a groove in said inner surface of said trim piece extending along said predetermined pattern;

said groove being formed with a bottom portion comprised of a series of spaced apart partial penetrations in the inside of said cover layer spaced along said predetermined pattern without completely penetrating said cover layer.

28. The trim piece according to claim 27 wherein said cover layer has a predetermined remaining thickness along said predetermined pattern at the bottom of said spaced apart penetrations.

29. The trim piece according to claim 27 wherein said trim piece includes an inside rigid substrate layer defining said inner surface, said cover layer, and an intervening foam layer.

30. A preweakened automotive interior trim piece [] for covering an air bag installation in an automotive vehicle, [] said preweakening applied in a predetermined pattern at a particular location so as to enable formation of an air bag deployment opening in said trim piece for an air bag installation covered at said location by pressure exerted by deployment of said air bag, said trim piece having an outer cover layer visible from within a passenger compartment of said automotive vehicle and extending smoothly and uninterruptedly across said preweakening at said particular location, said trim piece further including a rigid substrate layer underlying said cover layer;

said preweakening comprising a complete penetration of said substrate layer and a partial penetration of said cover layer at spaced apart points along said predetermined pattern without completely penetrating said cover layer.

31. The trim piece according to claim 30 wherein said trim piece comprises a construction having a foam layer in between said substrate and cover layer.

32. The trim piece according to claim 30 wherein said trim piece comprises a substrate and foam clad cover layer construction.

33. An automotive interior trim piece for covering an air bag installation, said air bag installation including a folded air bag adapted to be inflated and deployed upon detection of a collision,

said trim piece having a smooth, uninterrupted cover layer overlying a substrate panel associated with an air bag deployment door;

said cover layer having an inside surface scored in a predetermined pattern to be preweakened to enable formation of an air bag deployment opening extending through said trim piece by said inflating air bag pushing through said trim piece, having a predetermined spatial relationship with said deployment door; and,

an intervening space between said cover layer and said substrate panel filled with a foam layer bonding said cover layer and substrate panel together.

34. The trim piece according to claim 33 wherein said scoring is continuous.

35. The trim piece according to claim 33 wherein said scoring is intermittent.

36. The trim piece according to claim 33 wherein said foam and substrate layers are also preweakened along said predetermined pattern

37. The trim piece according to claim 33 wherein a scrim layer is bonded to inner side of said substrate panel and is also preweakened along said predetermined pattern

38. An automotive interior trim piece [for covering an air bag installation], said air bag installation including a folded air bag adapted to be inflated and deployed upon detection of a collision, said trim piece having a smooth, uninterrupted covering layer overlying a substrate panel associated with an air bag deployment door:

said trim piece preweakened in a predetermined pattern to enable formation of an air bag deployment opening extending through said trim piece by said inflating air bag pushing through said trim piece;

said trim piece preweakened by a scoring pattern on inner side of said covering layer by extending to a depth on the order of 20% to 80% of the thickness of said covering layer.

39. The trim piece according to claim 38 wherein said scoring is continuous.

40. The trim piece according to claim 38 wherein said scoring is intermittent.

41. The trim piece according to claim 38 wherein said covering layer comprises a skin preformed with a foam backing layer.

42. The trim piece according to claim 38 wherein said substrate is also preweakened along said predetermined pattern

43. The trim piece according to claim 38 wherein a scrim layer is bonded to inner side of said substrate panel and is also preweakened along said predetermined pattern

44. A preweakened automotive interior trim piece [for covering an air bag installation,] said preweakening applied in a pattern enabling formation of an air bag deployment opening in said trim piece by pressure exerted by a deploying air bag mounted on the inside of said trim piece at a particular location, said trim piece having at least one layer defining an inside surface of said trim piece, said trim piece having an outer visible surface extending smoothly and uninterruptedly across said preweakening at said particular location, said preweakening comprising a partial scoring of said at least one layer in a predetermined pattern to a depth varying from approximately between 20% and 80% of said at least one scored layer thickness.

45. A preweakened automotive interior trim piece [for covering an air bag installation,] said preweakening applied in a pattern enabling formation of an air bag deployment opening in said trim piece, by pressure exerted by a deploying air bag mounted on the inside of said trim piece at a particular location, said trim piece having an outer visible surface extending smoothly and uninterruptedly across said preweakening at said particular location, said preweakening consisting of a series of perforations in said trim piece.